REMARKS

In this response, claims 1, 13, 25, 38, 60, 73-74, 76, 79-81, 83-84, 87, 89 and 93 have been amended, and claims 6 and 18 canceled. Claims 1-5, 7-17 and 19-96 are pending, of which claims 1, 13, 25, 38, 60, 73, 80 and 87 are independent claims. Applicant respectfully submits that the presently pending claims, as identified above, are now in a condition for allowance.

I. Claim Amendments

Claims 1 and 13 have been amended to incorporate the subject matter of claims 8 and 18, respectively. Claims 8 and 18 have been canceled. Claims 1 and 13 have also been amended to improve the readability of the claims. No new matter has been introduced.

Claims 73-74, 76, 80, 83, 87, 89 and 93 have been amended to add the language "instructions for" to clarify that the medium includes computer executable instructions. Applicant submits these amendments are related to the formality of the claims, not to the patentability of the claims.

II. Summary of Rejections

Claims 1-72 remain rejected under 35 U.S.C. §101 as being directed non-statutory subject matter (office action, page 28).

Claims 1-72 stand rejected under 35 U.S.C. §112, first paragraph, as being based on a disclosure that is not enabling.

Claims 1-2, 4-14, 16-24, 38-41, 54-72 and 80-96 stand rejected under 35 U.S.C. §103(a) as being unpatentable over "AeroSim Blockset User's Guide ("the AeroSim manual").

Claims 3, 15, 25-37, 42-53 and 73-79 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the AeroSim manual in view of "FDC 1.2 – A SIMULINK Toolbox for Flight Dynamics and Control Analysis" ("the FDC manual").

These rejections will be discussed below.

III. Claim Rejections under 35 U.S.C. §101

Claims 1-72 remain rejected under 35 U.S.C. §101 as being directed non-statutory subject matter (office action, page 28). Applicant respectfully traverses the rejection.

A.   Claims 1, 13, 25, 38, and 60

In the Non-Final Office Action dated December 11, 2006 ("previous office action"), claims 1, 13, 25, 38 and 60 were rejected as not producing a useful, concrete and tangible result (previous office action, page 4, paragraph 22).

Applicant submits that these claims produce a useful, concrete and tangible result. Claims 1 and 13 have been amended to require "saving the model of the target system that includes the first component model in a memory." Claims 25, 38 and 60 require "a memory for saving the model of the target system." Applicant submits that the stored model of the target system saved in a memory is a tangible and concrete result. Applicant also submits that a computer simulation model is useful for an engineer or system designer to determine the characteristic of a target system before physically implementing the target system.

In view of the arguments set forth above, Applicant respectfully submits that claims 1, 13, 25, 38 and 60 are directed to statutory subject matter. Applicant therefore requests withdrawal of the 35 U.S.C. §101 rejection of claims 1, 13, 25, 38 and 60.

B.   Claims 25, 38 and 60

The previous office action states that "claims 25, 38 and 60 recite software limitations and therefore the claims are directed to software per se, which are considered non-statutory subject matter" (previous office action, page 5). Applicant respectfully disagrees.

Claims 25, 38 and 60 recite a computer implemented system for designing a target system. The claims include elements, such as a memory and a design unit, which are implemented in a computer system. The elements of the claims are not software per se. Rather, the elements are implemented as a combination of hardware and software.

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Applicant therefore submits that claims 25, 38 and 60 are directed to statutory subject matter. As such, Applicant respectfully requests withdrawal of the rejection of claims 25, 38 and 60 under 35 U.S.C. §101.

IV. Claim Rejections under 35 U.S.C. §112

Claims 1-72 stand rejected under 35 U.S.C. §112, first paragraph, as being based on a disclosure which is not enabling (office action, page 2). The Examiner notes that "a description of what specifically encompasses "a storage element" is absent from the disclosure" (office action, page 2). Applicant has amended claims 1, 13, 25, 38 and 60 to change "storage element" to "memory." An exemplary memory is described in Fig. 1, reference character 150 or 160 and pages 10-11. No new matter has been introduced by way of these amendments. Applicant respectfully requests withdrawal of the rejection of claims 1-72 under 35 U.S.C. §112, first paragraph.

V. Claim Rejections over the AeroSim manual

Claims 1, 2, 4-14, 16-24, 38-41, 54-72 and 80-96 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the AeroSim manual (office action, page 2). Applicant respectfully traverses the rejection.

A. Independent Claim 1

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest at least the following features of claim 1: (1) "displaying a user interface in response to a user action, where the user action includes selecting the first icon, the user interface including a mechanism that provides the user with the multiple component models"; and (2) "incorporating the first component model into the model of the target system using the first icon."

1. "displaying a user interface in response to a user action, where the user action includes selecting the first icon, the user interface including a mechanism that provides the user with the multiple component models"

The Examiner alleges that "AeroSim discloses presenting a user interface in response to an action taken by a user (see "double-click the block to open the block parameters dialog" in

page 32, 4th paragraph and user interface/dialog box in Fig. 2) selecting an icon" (office action, page 4, paragraph 8).

The Examiner refers to Fig. 2 and Fig. 31 of the AeroSim manual as disclosing the user interface recited in claim 1 (office action, page 3, paragraph 7 and page 4, paragraph 8). The user interface of Fig. 2 and Fig. 31 of the AeroSim manual displays a block library showing available blocks. The AeroSim manual discloses that that the icons displayed in the user interface of Fig. 2 and Fig. 31 represent the sub-folders of the block library. The AeroSim manual recites (page 41, 2nd paragraph) that:

> The main library folder, shown in Fig. 31 includes sub-folders for various parts of the aircraft dynamic model. The sub-sections of the **Block Reference** section correspond to these library subfolders. The **AeroSim** library contains a total of 103 blocks. Almost all of them are implemented using basic Simulink blocks, with the exception of a few such as the WMM-2000 Earth magnetic model, and the pilot interface blocks which use operating system calls unavailable in Simulink - these are implemented using C/C++ as C-MEX S-functions. The source code for these S-function is provided with the **AeroSim** library.

In contrast, the first icon of claim 1 represents multiple component models in the model of a target system. The first icon is associated with a component in the model of the target system. In claim 1, the user interface is displayed in response to a user action including an action selecting the first icon. The user interface includes a mechanism that provides the user with the multiple component models so that a user selects a first component model from the multiple component models. The selected first component model is incorporated into the model of the target system using the first icon.

The user interface of Fig. 2 and Fig. 31 of the AeroSim manual is not displayed in response to a user action including an action selecting **an icon in a model**. AeroSim allows a user to select an icon that represents a library of blocks but that icon is not in the model. The user interface of claim 1 is displayed in response to a user action selecting an icon in the model of the target system, and includes an option that lets a user to select one of multiple component models that can be represented by the icon. With this feature, an icon provided in a model may represent different component models depending on a user's selection.

The user interface of Fig. 2 and Fig. 31, however, is not displayed in response to a user action selecting an icon in a model. Rather, the user interface of Fig. 2 and Fig. 31 of the AeroSim manual is provided regardless of a model. Furthermore, the user interface of Fig. 2 and Fig. 31 of the AeroSim manual does not provide an option for a user to select one of multiple component models that can be represented by the icon in the model.

2.   "incorporating the first component model into the model of the target system using the first icon"

The Examiner also alleges that AeroSim discloses "selecting a first component model provided in the user interface so that the icon becomes associated with and represents the component model (see icons in either page 3, Fig. 2 or page 41, Fig. 31)" (office action, page 4, paragraph 8).

The Examiner refers to Fig. 2 and Fig. 31 of the AeroSim manual as disclosing the above feature. In Fig. 2 and Fig. 31 of the AeroSim manual, the icons represent the *predetermined* sub-folders in a block library (Fig. 1). In contrast, the method of claim 1 requires that the component model is selected in the user interface and then incorporated into the model of the target system. That is, the first component model is incorporated into the model of the target system after the first component model is selected in the user interface. The user interface is provided in response to a user action selecting an icon that represents multiple component models in the model of the target system. The AeroSim manual does not disclose or suggest the incorporation of the component model after the user selects the component model in the user interface provided in response to a user action selecting the icon.

In view of the above arguments, Applicant submits that the AeroSim manual fails to disclose or suggest all of the features of claim 1. Applicant therefore requests withdrawal of the 35 U.S.C. §103(a) rejection of claim 1.

B. Dependent Claims 2 and 4-12

Claims 2 and 4-12 depend from claim 1 and, as such, incorporate all of the features of claim 1 and are in condition for allowance for at least the same reasons presented above with

respect to claim 1. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 2 and 4-12.

The dependent claims recite still other features that are not disclosed or suggested by the AeroSim manual. For example, the AeroSim manual fails to disclose or suggest "switching the first icon to represent a second component model by selecting the second component model in the user interface," as recited in claim 2. The Examiner asserts that the AeroSim manual discloses this feature at page 3, column 2, last paragraph, line 1-3 (office action, page 6). Applicant respectfully disagrees.

The portions of the AeroSim manual identified by the Examiner discuss the sub-folders provided in the block library. The AeroSim manual, however, does not disclose or suggest the feature of "switching the first icon to represent a second component model by selecting the second component model in the user interface," as recited in claim 2. As noted above, the present application enables a user to switch an icon in a model to represent a different component model without replacing the icon with a new icon representing the different component model. As such, during model testing, a developer may easily choose different component models to see how the model behaves without the need to replace and reconnect blocks. The AeroSim manual does not disclose or suggest selecting a component model among multiple component models and switching the icon to represent a different component model.

For at lest the reasons presented above, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 2 and 4-12.

C. Independent Claim 13

Claim 13 recites among other things: (1) "presenting a user interface in response to an action taken by a user selecting the first icon, the user interface including an option that provides a user with multiple component models for the user to select one of the multiple component models"; and (2) "in response to the user selecting a first component model among the multiple component models, associating and representing the first icon for the component with the first component model after a sequence of modifications to the model, wherein the component model

is incorporated into the model of the target system through the icon." The AeroSim manual does not disclose or suggest at least these features of claim 13.

The arguments presented above with respect to claim 1 are also applicable to claim 13. In view of the above arguments, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claim 13.

D. Dependent Claims 14 and 16-24

Claims 14 and 16-24 depend on base claim 13 and, as such, incorporate all of the features of claim 13. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 14 and 16-24.

Applicant also respectfully submits as an additional reason for allowance that AeroSim fails to disclose or suggest "switching the first icon to represent a second component model by selecting the second component model in the user interface," as recited in claim 14. The arguments presented above with respect to claim 2 are also applicable to claim 14. For at least the reasons presented above, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claim 14.

D. Independent Claim 38

Applicant respectfully submits that AeroSim fails to disclose or suggest at least the following feature of claim 38: "the model storage provides a plurality of wind turbulence models including at least a discrete wind turbulence model."

The Examiner refers to AeroSim, page 65 as disclosing this feature (office action, page 12). At page 65, the AeroSim manual discloses a turbulence block that provides a von Karman turbulence model (Figure 47). The AeroSim manual discloses that "[t]he block is applying von Karman turbulence shaping filters for longitudinal, lateral and vertical components to 3 white-noise sources."

In comparison, the model storage of claim 38 provides a plurality of wind turbulence models including at least one discrete wind turbulence model. The discrete wind turbulence

model gives the wind turbulence a discrete velocity spectrum. The AeroSim manual, however, is silent about whether the turbulence block represents a discrete wind turbulence model or a continuous wind turbulence model. The AeroSim manual does not disclose or suggest that the block library provides a plurality of wind turbulence models including at least a discrete wind turbulence model.

For at least the reasons presented above, Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claim 38 under 35 U.S.C. §103(a).

E. Dependent Claims 39-41 and 54-59

Claims 39-41 and 54-59 depend on base claim 38 and, as such, incorporate all of the features of claim 38, and are in condition for allowance for at least the same reasons presented above. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 39-41 and 54-59.

F. Independent Claim 60

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest at least the feature of claim 60: "the model storage provides a plurality of models for equations of motion, wherein the plurality of models for equations of motion include at least one model for equations of motion with simple variable mass and at least one model for equations of motion with custom variable mass."

The Examiner refers to the AeroSim manual, page 3, column 2, last paragraph, lines 3-5 as disclosing this feature (office action, page 14). The portions of the AeroSim manual identified by the Examiner disclose that "[t]hese include nonlinear equations of motion, linear aerodynamics, piston-engine propulsion, aircraft inertia parameters, atmosphere models, Earth models, sensors ...." The AeroSim manual also discloses that "[t]here are two formulations for the equations of motion that are commonly used, and they are provided in two separate sub-folders within the AeroSim library. These are: the EOM with velocities in body axes (XYZ), and the EOM with aircraft velocities in geodetic frame (NED)" (page 89).

The AeroSim manual, however, does not disclose or suggest a model for equations of motion with simple variable mass and a model for equations of motion with custom variable mass. In simple variable mass, mass changes via mass rate, and in custom variable mass, a user specifies how the mass changes and other parameters that are closely dependent on the mass change. The AeroSim manual is silent about the equations of motion (EOM) with simple variable mass or custom variable mass.

For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 60 under 35 U.S.C. §103(a).

G. Dependent Claims 61-72

Claims 61-72 depend on base claim 60 and, as such, incorporate all of the features of claim 60 and are in condition for allowance for at least the same reasons presented above. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 61-72.

H. Independent Claim 80

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest the feature of claim 80: "the wind turbulence model includes at least one discrete wind turbulence model." The arguments presented above with respect to claim 38 are also applicable to claim 80. For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 80 under 35 U.S.C. §103(a).

I. Dependent Claims 81-86

Claims and 81-86 depend on base claim 80 and, as such, incorporate all of the features of claim 80 and are in condition for allowance for at least the same reasons presented above. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 81-86.

J. Independent Claim 87

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest the feature of claim 87: "the equations of motion models include at least one of simple variable mass models and custom variable mass models." The arguments presented above with respect to

claim 60 are also applicable to claim 87. For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 87 under 35 U.S.C. §103(a).

K. Dependent Claims 88-96

Claims 88-96 depend on base claim 87 and, as such, incorporate all of the features of claim 87, and are in condition for allowance for at least the same reasons presented above. Applicant respectfully requests withdrawal of the 35 U.S.C. §103(a) rejection of claims 88-96.

VI. Claim Rejections over the AeroSim and FDC manual

Claims 3, 15, 25-37, 42-53 and 73-79 stand rejected under 35 U.S.C. §103(a) as being unpatentable over the AeroSim manual in view of the FDC manual (office action, page 18). Applicant respectfully traverses the rejection.

A. Dependent Claims 3 and 15

Claims 3 and 15 depend on base claims 1 and 13 and as such, incorporate all of the features of claims 1 and 13, respectively. The Examiner cites the FDC manual to provide disclosing for the features added in dependent claims 3 and 15. The FDC manual, however, does not disclose or suggest the feature of claim 1: "selecting a first component model provided in the user interface so that the icon represents the first component model." The FDC manual also does not disclose or suggest the feature of claim 13: "selecting a first component model provided in the user interface so that the icon represents the first component model after a sequence of modifications to the model."

Furthermore, Applicant submits that the FDC manual does not disclose or suggest the feature that "the component models belong to a category of atmosphere models that include at least a non standard day atmosphere model," as recited in independent claims 3 and 15.

In the Office Action, the Examiner refers to the present application, page 13, second paragraph, lines 10-13 and interprets a non standard day atmosphere model as a model in which the geometrical altitude is replaced with the geopotential altitude (office action, page 19). Based

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on this interpretation, the Examiner alleges that the equations provided in page 25 of the FDC manual disclose a non standard day atmosphere model (office action, page 18).

The portion of the present application identified by the Examiner recites that (page 13, second paragraph, lines 10-13):

> The input of the models is geopotential height and the four outputs are temperature, speed of sound, air pressure, and air density.

Although the present application describes an exemplary embodiment with the geopotential altitude input, a non standard day atmosphere model may or may not have the geopotential altitude input. The use of the geopotential altitude input does not necessarily mean a non standard day atmosphere model. The present application describes an exemplary non standard day atmosphere model as follows (page 13).

> the Non-Standard Day 310 atmosphere model 223 and Non-Standard Day 210C atmosphere model 224 implement the data set forth in military standards MIL-HDBK-310 and MIL-STD-210C, respectively, for absolute temperature, pressure, density, and speed of sound for the input geopotential altitude. ... The standards MIL-HDBK-310 and MIL-STD-210C also provide consistent vertical profiles of temperature and density up to 80 km based on extremes at 5, 10, 20, 30 and 40 km. ... The military standards MIL-HDBK-310 and MIL-STD-210C are illustrative standards for the embodiment of non-standard day atmosphere models. One of skill in the art will appreciate that the non-standard day atmosphere models are not limited to the military standards MIL-HDBK-310 and MIL-STD-210C, and rather includes any specification describing an atmosphere other than the standard atmosphere.

The non standard day atmosphere model is a model that implements specifications describing an atmosphere other than the standard atmosphere. For example, the non standard day atmosphere model may provide consistent vertical profiles of temperature and density up to 80 km based on extremes at 5, 10, 20, 30 and 40 km.

The FDC manual does not disclose or suggest non standard day atmosphere model that represents specifications describing an atmosphere other than the standard atmosphere, such as an atmosphere including extremes. Replacing the geometrical altitude with the geopotential

altitude in the equations described at page 25 of the FDC manual does not disclose or suggest a non standard day atmosphere model. Rather, the FDC manual specifically discloses that the equations provided in page 25 use the International Civil Aviation Organization (ICAO) Standard Atmosphere model (page 24). The FDC manual uses a standard atmosphere model and not a non standard atmosphere model.

For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejections of claims 3 and 15 under 35 U.S.C. §103(a).

B. Independent Claim 25

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest the feature of claim 25: "the model storage includes at least one non-standard day atmosphere model." As discussed above, the FDC manual does not disclose or suggest a non standard atmosphere model. For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 25 under 35 U.S.C. §103(a).

C. Dependent Claims 26-37

Claims 26-37 depend on base claim 25 and as such, incorporate all of the features of claim 25. Claims 26-37 are not rendered obvious over the cited references. Applicant therefore requests withdrawal of the rejection of claims 26-37 under 35 U.S.C. §103(a).

D. Dependent Claims 42-53

Claims 42-53 depend on base claim 38 and as such, incorporate all of the features of independent claim 38. Applicant submits that the FDC manual does not disclose or suggest the feature that "the model storage provides a plurality of wind turbulence models including at least a discrete wind turbulence model," as recited in claim 38.

The Examiner cites the FDC manual to provide disclosure for the features added in claims 42-53. The FDC manual provides "an overview of the Flight Dynamics and Control toolbox FDC 1.2, a graphical software environment for the design and analysis of aircraft dynamics and control systems, based upon Matlab and Simulink" (page iii). The FDC manual, however, does not disclose or suggest that the model storage includes at least a discrete wind

turbulence model, as required in claim 38. In view of the arguments presented above, the combination of the prior art references fails to disclose or suggest all of the features of claim 38. Claims 42-53, which depend from claim 38, are not be rendered obvious over the cited references. As such, Applicant therefore requests withdrawal of the rejection of claims 42-53 under 35 U.S.C. §103(a).

E. Independent Claim 73

Applicant respectfully submits that the AeroSim manual fails to disclose or suggest the feature of claim 73: "the atmosphere models include non-standard day atmospheric models." The arguments presented above with respect to claims 3 and 15 are also applicable to claim 73. For at least the reasons presented above, Applicant respectfully requests withdrawal of the rejection of claim 73 under 35 U.S.C. §103(a).

F. Dependent Claims 74-79

Claims 74-79 depend on base claim 73 and as such, incorporate all of the features of claim 73. Accordingly, claims 74-79 are not rendered obvious over the cited references.

Furthermore, Applicant submits that the cited references fails to disclose or suggest that "the graphical user interface provides an option to change an atmosphere model to another atmosphere model," as recited in claim 78. The arguments presented above with respect to claims 2 and 14 are also applicable to claim 73.

In view of these arguments, Applicant therefore requests withdrawal of the rejection of claims 74-79 under 35 U.S.C. §103(a).
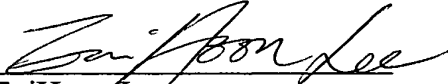
V. Conclusion

Please charge any shortage or credit any overpayment of fees to our Deposit Account No. 12-0080, under Order No. MWS-031. In the event that a petition for an extension of time is required to be submitted herewith, and the requisite petition does not accompany this response, the undersigned hereby petitions under 37 C.F.R. §1.136(a) for an extension of time for as many months as are required to render this submission timely. Any fee due is authorized to be charged to the aforementioned Deposit Account.

In view of the above comments, Applicant believes that the pending application is in condition for allowance and urges the Examiner to pass the claims to allowance. Should the Examiner feel that a teleconference would expedite the prosecution of this application, the Examiner is urged to contact the Applicant's attorney at (617) 227-7400.

Dated: October 1, 2007   Respectfully submitted,

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